



NASA GLENN ICING PHYSICS FLOW LABORATORY

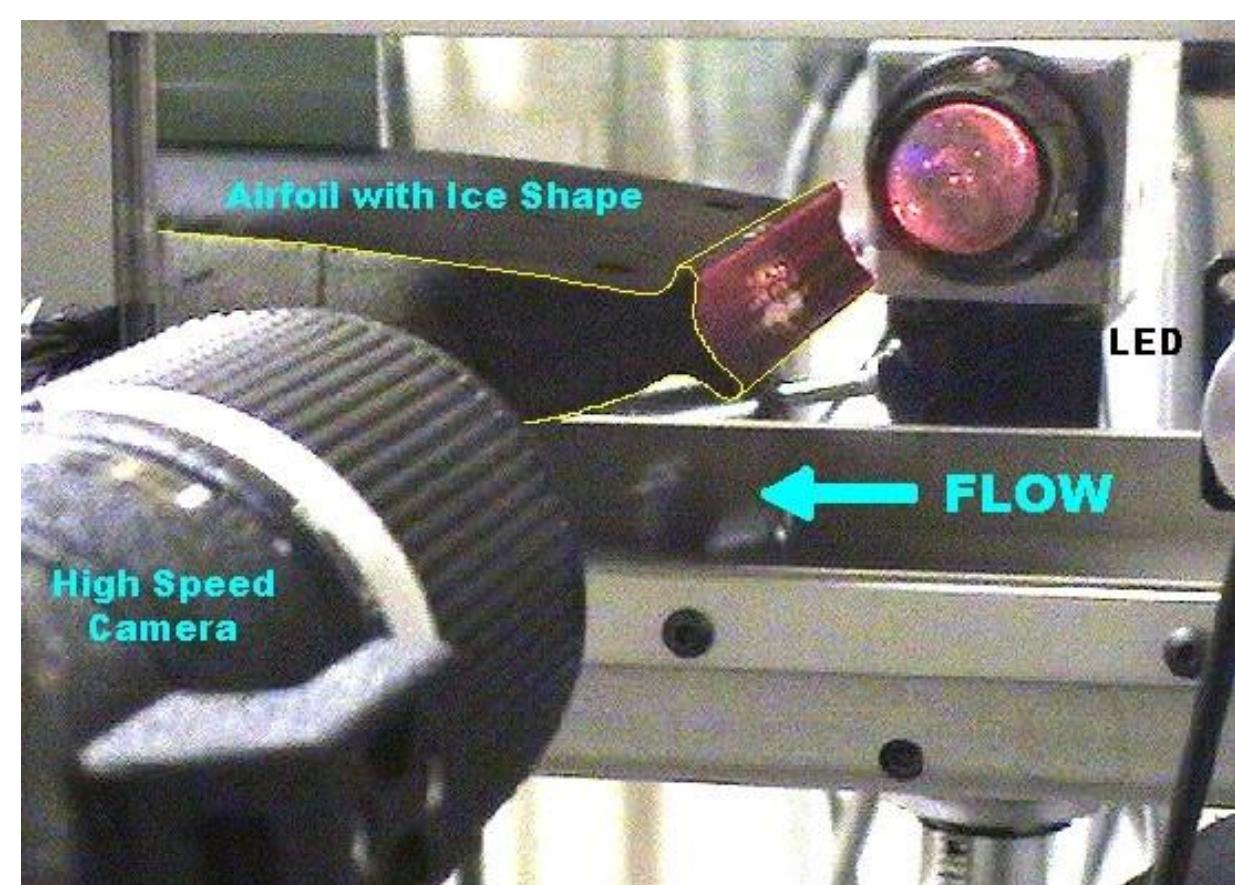
Experimental Facilities for Fundamental Research on the Physics of Ice Accretion



Droplet Imaging Flow Tunnel



The Droplet Imaging Flow Tunnel (DrIFT) is used to develop visualization methods for investigating droplet splashing around an airfoil.



- 6 in. x 6 in. Test Section
- 175 mph Max. Speed
- Phantom High Speed Camera and Laser Sheet

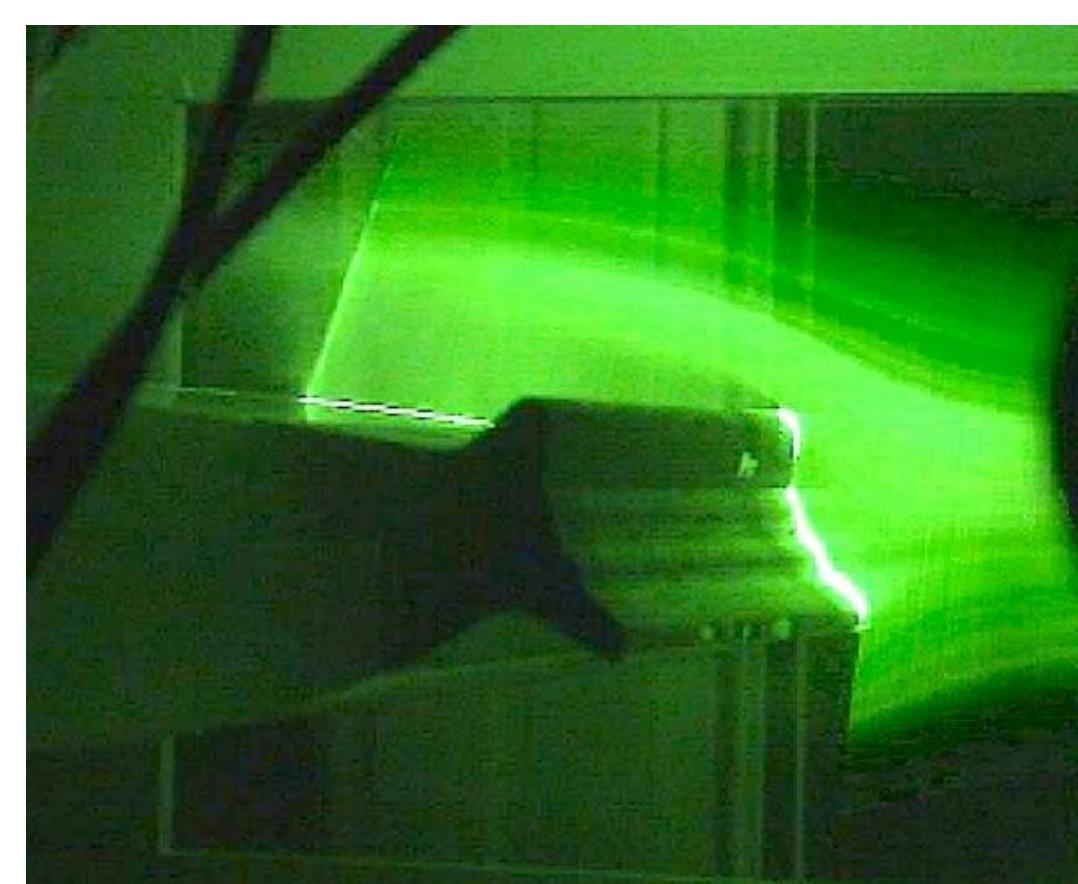
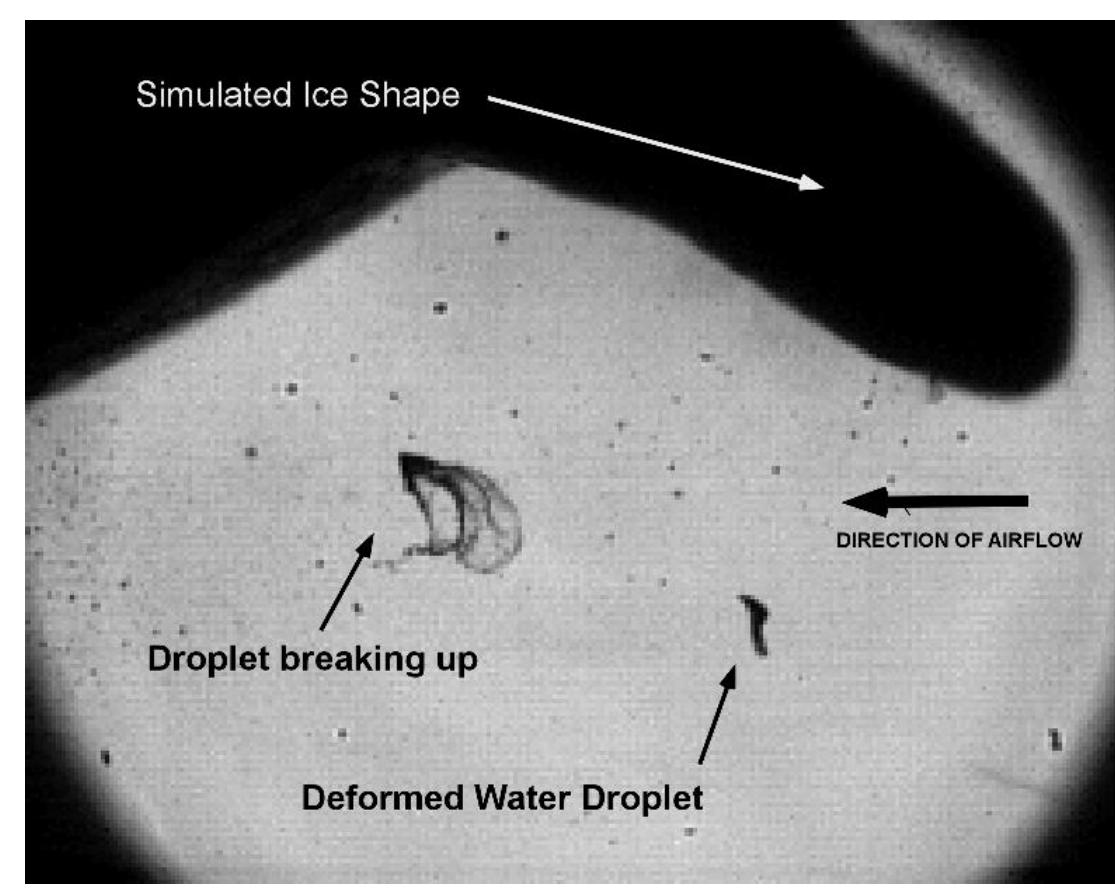
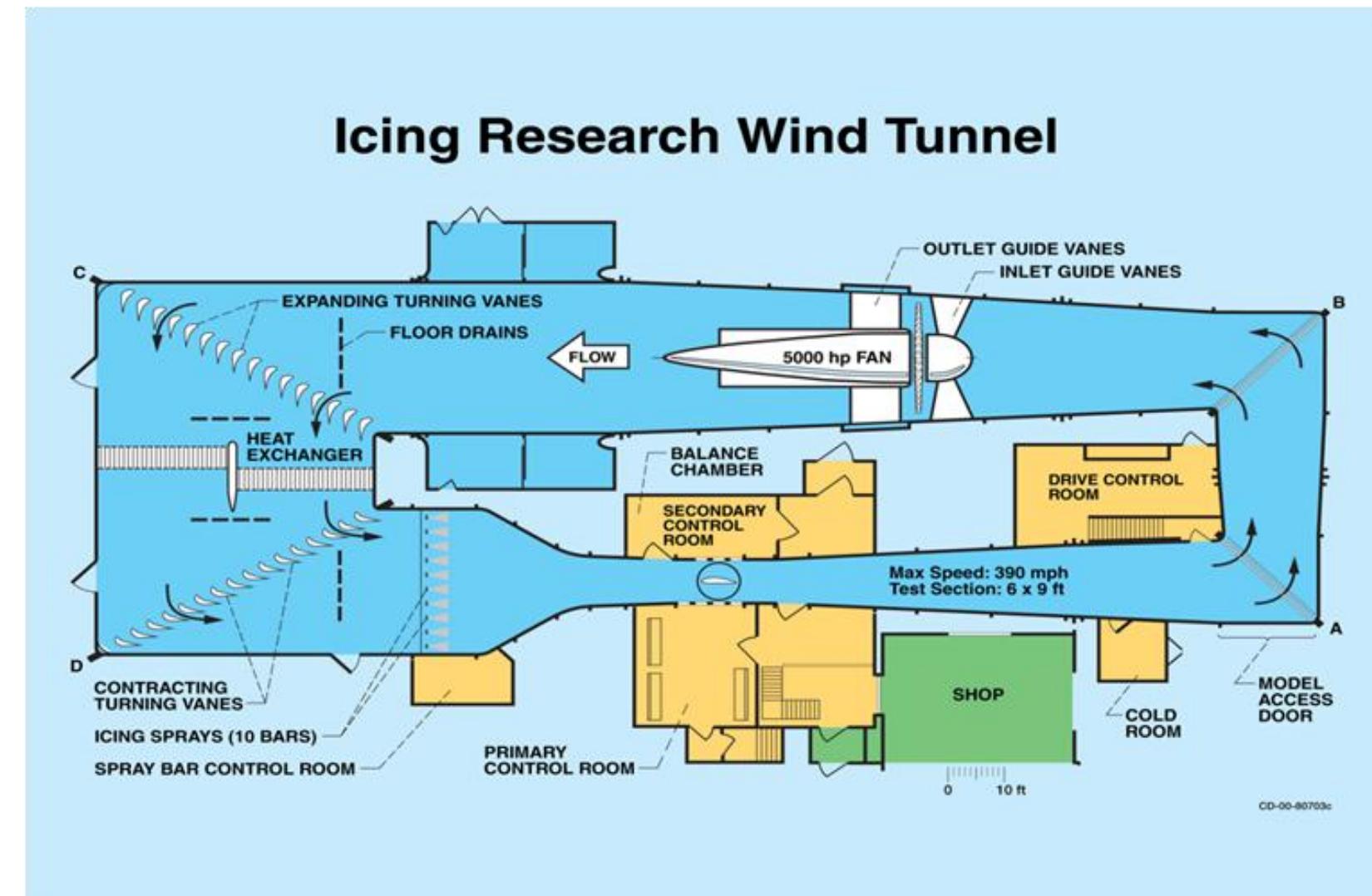


Image result showing droplet break-up events.



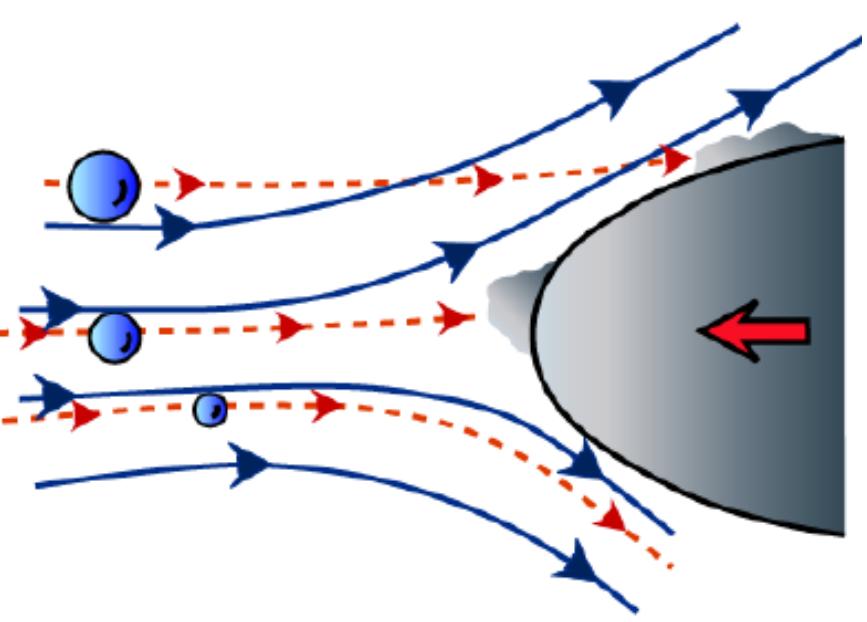
Experimental Icing Simulation Tools

The Icing Physics Flow Lab is used to investigate individual aspects of the ice accretion process. Other experimental facilities such as NASA's Icing Research Tunnel are used to simulate the in-flight icing environment in a controlled, repeatable manner.



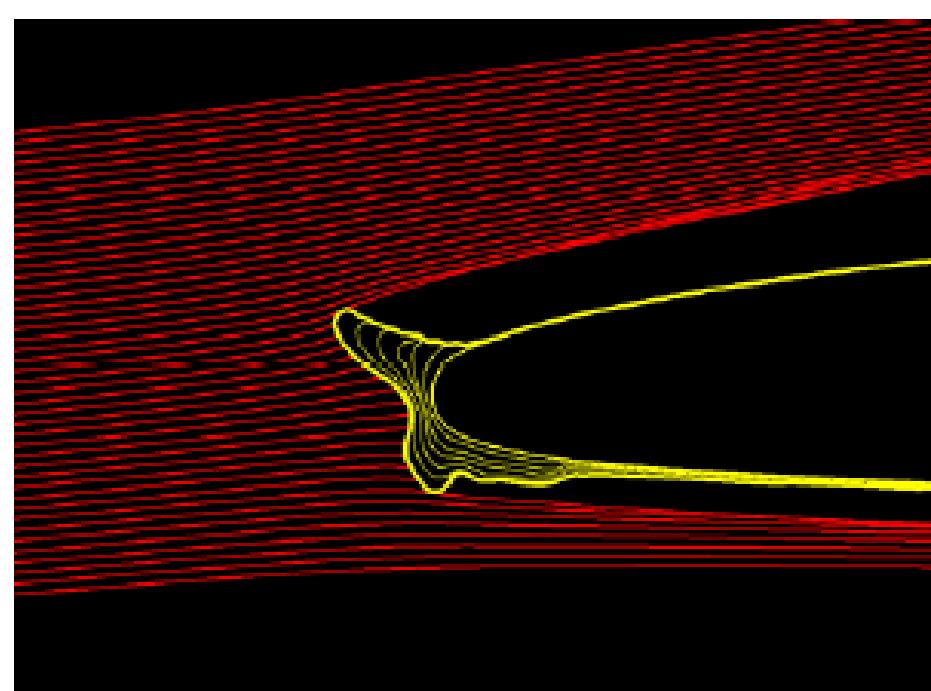
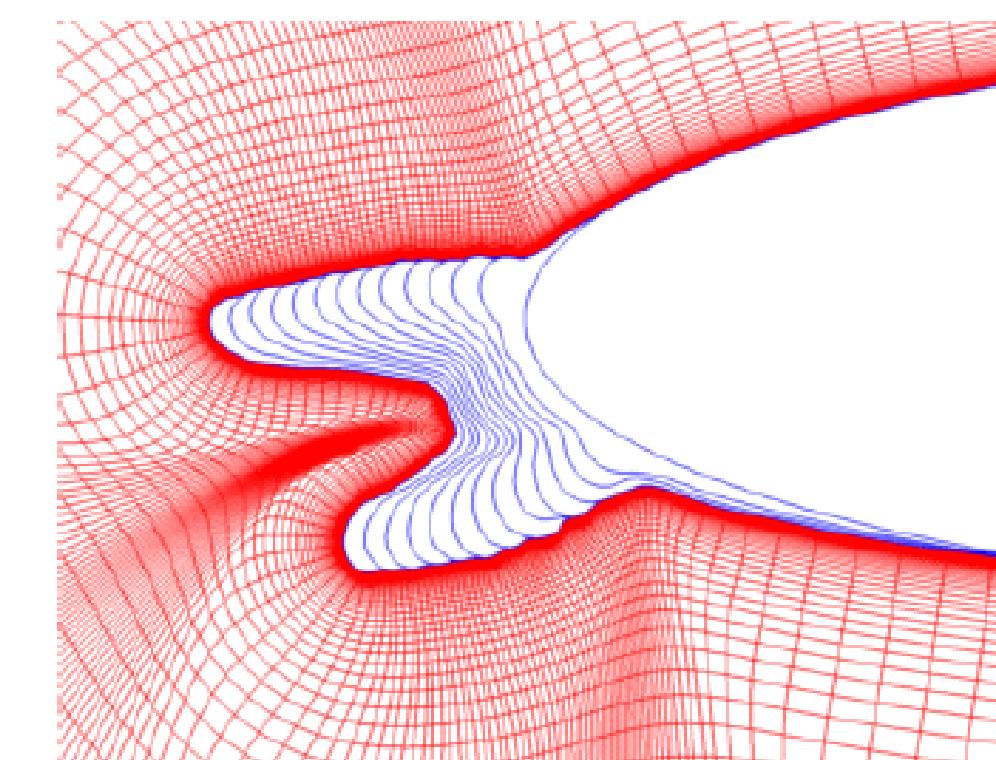
The In-Flight Icing Hazard

Ice buildup on exposed surfaces can occur when an airplane traverses through icing clouds composed of supercooled water.



Research conducted in the Icing Physics Flow Lab supports the development of computational tools such as NASA's LEWICE and LEWICE3D codes.

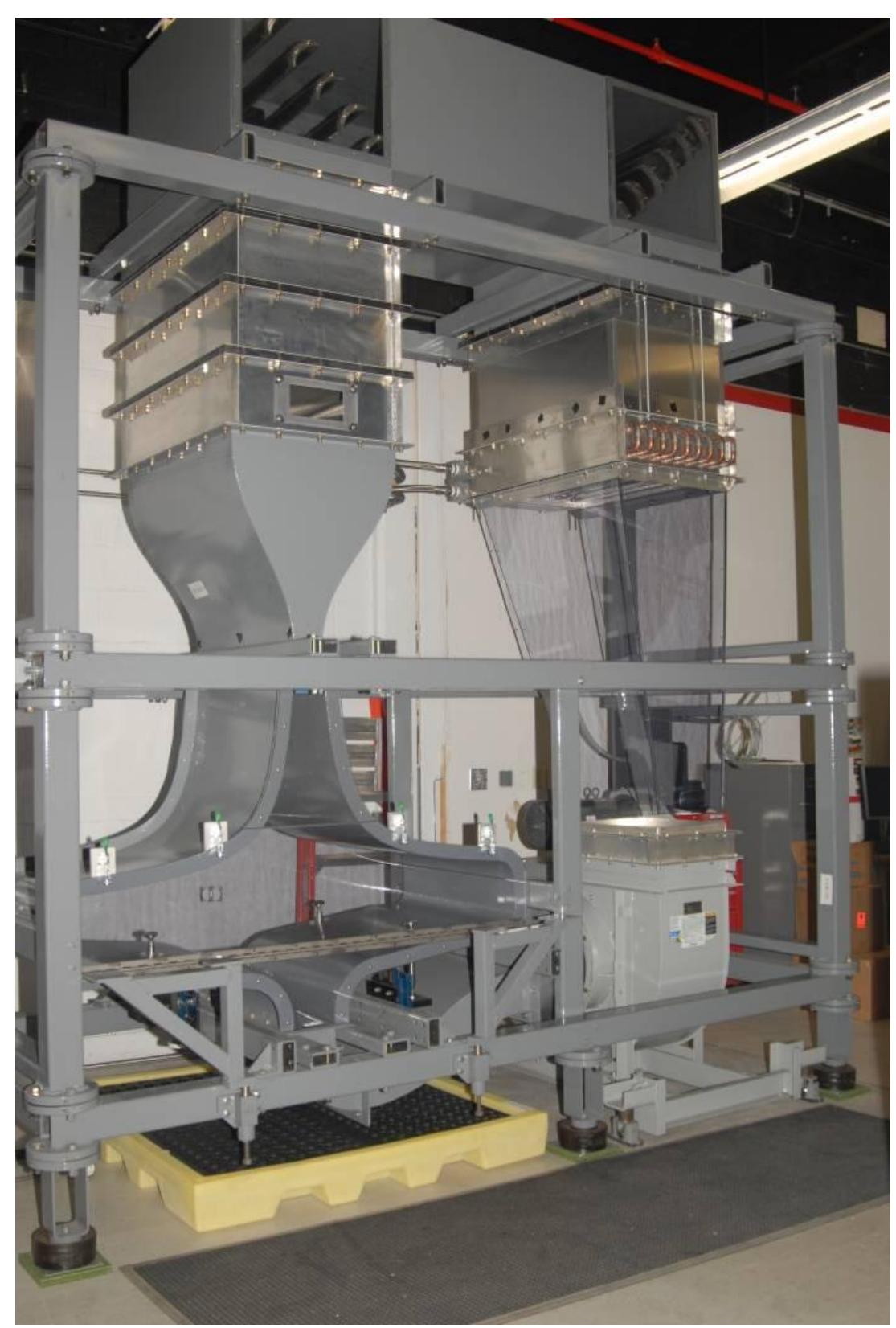
These codes are used to predict ice accretion geometry on wing sections and other aircraft surfaces.



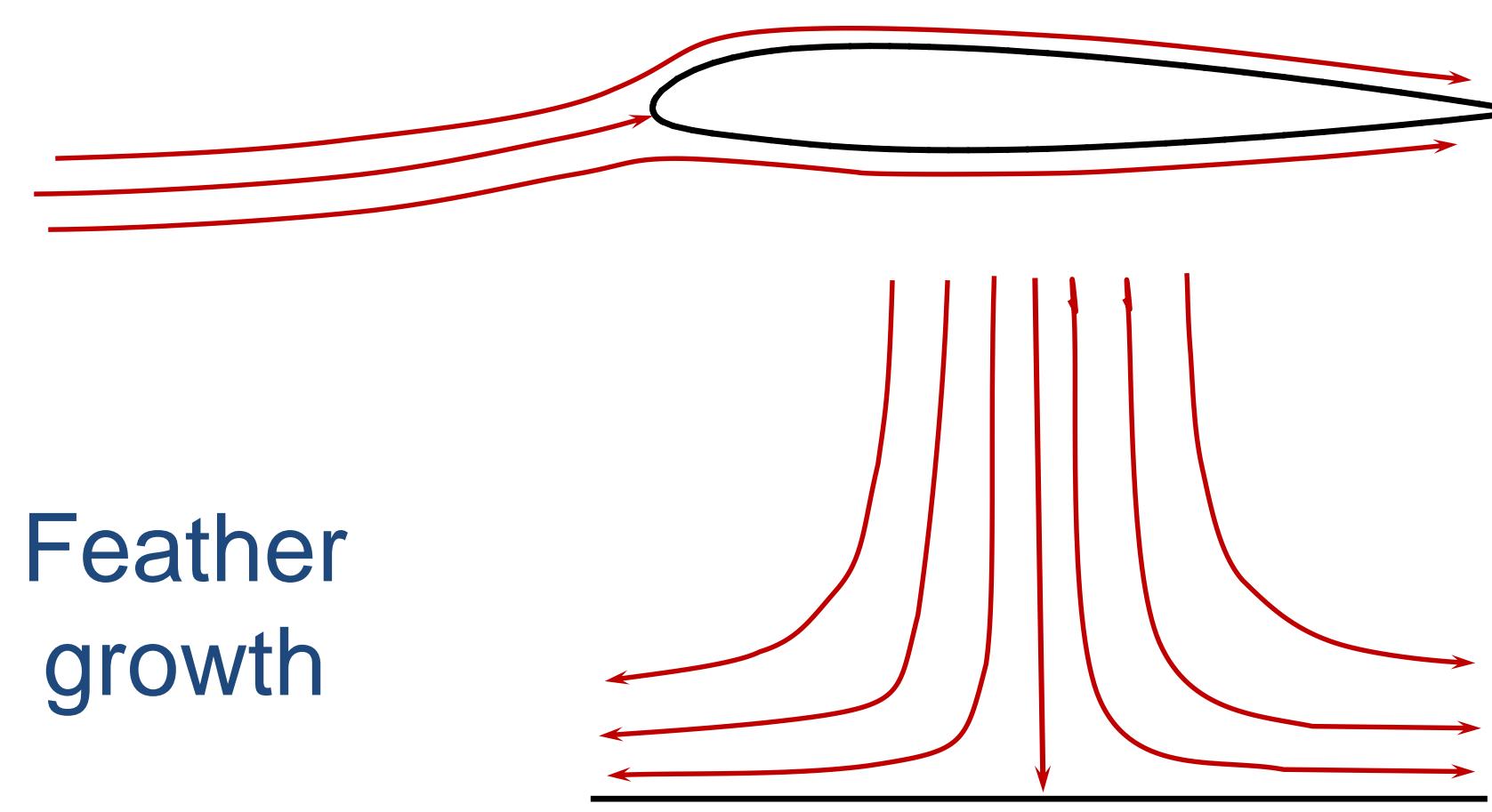
Vertical Icing Studies Tunnel

The Vertical Icing Studies Tunnel (VIST) is designed to study micro-scale phenomena in the stagnation point region during the initial stages of ice accretion formation

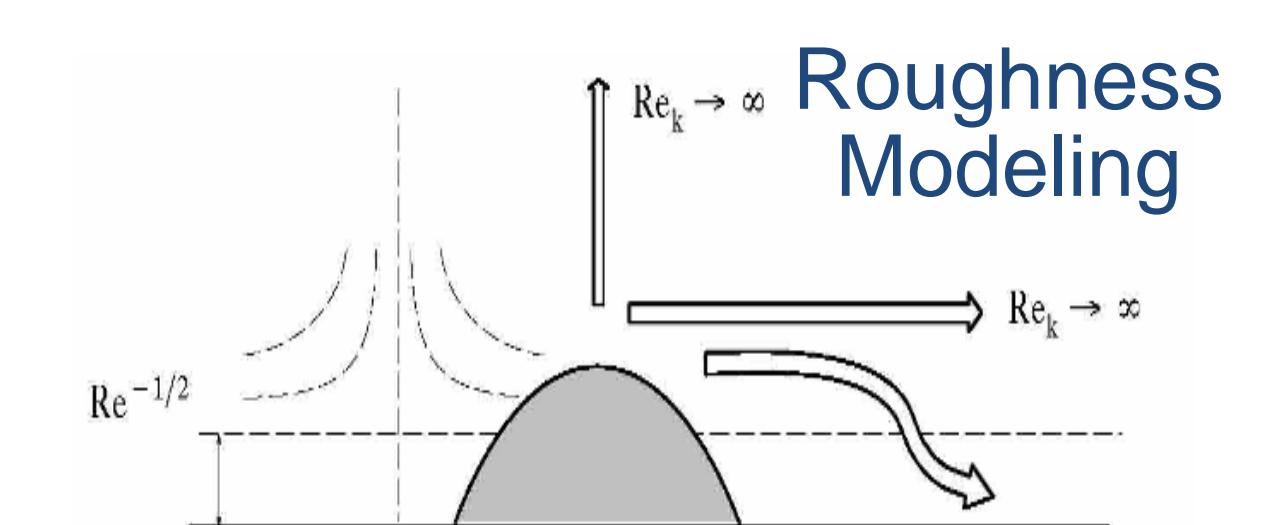
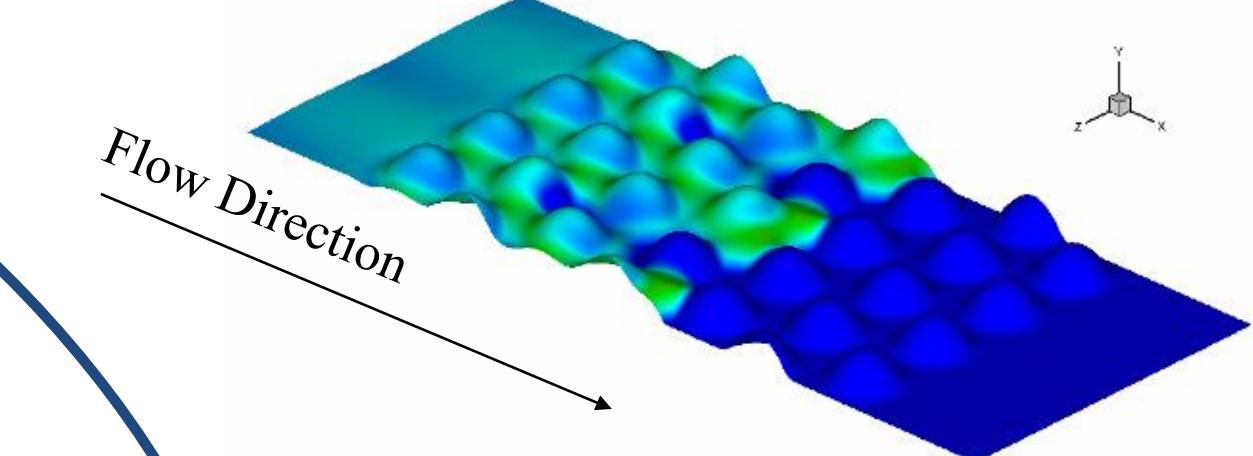
- Water film flow
- Roughness growth
- Feather formation
- Boundary-layer transition and heat transfer



Feather growth



Water film movement



Computational Icing Simulation Tools